

### Session 3: Active Microwaves

#### Analysis of SAR-Derived High-Resolution Digital Elevation Models

T. G. Farr\* and D. L. Evans  
Jet Propulsion Laboratory  
California Institute of Technology  
Pasadena, CA 91109  
Tel. (818) 354-9057  
FAX (818) 354-9476

High resolution topographic data over several sites have been generated from subsequent passes of the European Space Agency (ESA) Earth Remote Sensing Satellite (ERS-1) and the Jet Propulsion Laboratory (JPL) Airborne SAR (TOPSAR) system in order to assess the applicability of radar interferometry for a variety of scientific applications. Topographic profiles have been taken parallel to and on each side of faults in order to determine the amount of slip on the fault. Profiles across volcanoes have also been used to study their constructional and erosional history. Three-dimensional shapes of landforms have been analyzed to obtain information on their formation and modification. Slope and azimuth maps have also been generated for correction of illumination geometry effects and derivation of local incidence angles for inversion of radar images. The TOPSAR instrument is a prototype of an orbital sensor proposed to acquire global high resolution digital topography. These studies are being used to help define quantitative requirements for the spaceborne sensor.

This work was carried out by the Jet Propulsion Laboratory, California Institute of Technology, under contract with NASA.

\*speaker